

ABSTRACT

A methodology is provided for designing traction surfaces intended to grip and provide traction on substrate surfaces. Fractal geometry is used to design tire treads, shoe treads, elastomeric traction surfaces, drive rollers, friction wheels for material locomotion or power transmission and belts for pulley drives, and such related devices requiring friction to transmit a tractional force. The methodology is performed empirically and/or analytically. The empirical method involves iterative design and testing of traction surfaces having fractal characteristics to maximize traction against a particular substrate surface. The analytical method uses analysis of substrate surfaces, and the design and development of appropriately scaled and contoured traction surfaces having fractal characteristics. The tread pattern generally contains design motifs spanning at least two doublings in linear dimension as to length, width and/or depth.